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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,478	09/29/2004	Marten Erik Van Dijk	NL 020269	1367

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EXAMINER

CHAUDRY, MUJTABA M

ART UNIT PAPER NUMBER

2133

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/509,478	Applicant(s) VAN DIJK ET AL.	
	Examiner Mujtaba K. Chaudry	Art Unit 2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-16 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/2/2005</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Preliminary Amendment***

The preliminary amendment to the claims filed September 29, 2004 has been entered. Claims 1-16 are present for examination on the merits.

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on November 02, 2005 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the Examiner.

### ***Oath/Declaration***

The Oath filed September 29, 2004 complies with all the requirements set forth in MPEP 602 and therefore is accepted.

### ***Drawings***

The drawings are objected to because:

- Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
- Figure 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Appropriate correction is required.

### *Specification*

The disclosure is objected to because of the following informalities:

Applicant is reminded of the proper language and format for an abstract of the disclosure.

**The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the**

*abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.*

*The language should be clear and concise and should not repeat information given in the title or claim(s). It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.*

The abstract of the disclosure is objected to because it is not in conformance with the requirements stated in the MPEP. Applicants are suggested to rewrite the abstract using the information stated above including limiting the abstract to a single paragraph and not more than 150 words.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or  
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

#### Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

Or alternatively, Reference to a "Microfiche Appendix": See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.

- (e) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
  - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

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- (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (f) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (g) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (h) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (i) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (j) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the

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international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

- (k) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

The disclosure is objected to because it is not in conformance with the requirements stated herein-above. For example, the specification does not specifically have sub-headings for the “field of invention,” “background of invention,” “summary” etc.

Appropriate correction is required.

### *Allowable Subject Matter*

Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites, “...reducing the length of each row...by adding row symbols together...” The Examiner is not sure what the applicants intend to convey. For example, if Row 1 = (1 1 1 1) and Row 2 = (1 0 1 0); then adding Row 1 + Row 2 = (0 1 0 1), which is the same



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length. It is possible that the Examiner is misinterpreting the claim language. However, it is more likely that the claim language is missing essential elements or is inherently flawed. In any case, clarification is needed to the claims. The Examiner reserves the right to disregard this limitation while examining the claim on the merits.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-6 and 8-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo (USPN 6581178) further in view of Kimura et al. (USPN 5757825).

As per claim 1, Kondo substantially teaches (abstract) an error correction coding method comprising **segmenting continuous transmission data in units of predetermined lengths**, rearranging the data in parallel, and **performing error correction coding processing for each of horizontal line blocks** and vertical line blocks of the rearranged transmission data. The Examiner would like to point out that segmenting data units into predetermined lengths is analogous to reducing the length of each row of the present application.

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Kondo does not explicitly teach to embed horizontal parities within the shortened row code words as stated in the present application.

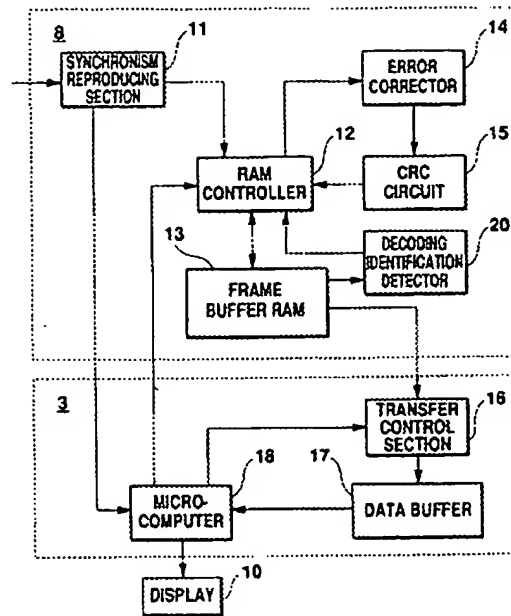


Fig. 7

However, Kimura et al. (herein after referred to as single entity: Kimura) in an analogous art, substantially teaches (Figure 7) a digital signal is composed of a frame which consists of a predetermined number of blocks in the vertical direction, a block consisting of a predetermined number of bits in the horizontal direction and having a horizontal parity (error correcting code) for correcting error in the horizontal direction and a vertical parity for correcting errors in the vertical direction. The block also has a control bit for determining whether the error correction in the horizontal direction is to be carried out only once. A decoding identification detector (20) detects the content of the control bit, a controller (12) controls the re-writing of the digital signal into a frame buffer (13) after the error correction of the digital signal in the vertical direction by an error corrector (14). The controller (12) also controls the provision of the digital signal stored

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in the buffer (13) to the error corrector (14) according to the content of the control bit, determining whether the second error correction in the horizontal direction is to be carried out. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to embed horizontal parities within the shortened row code words within the method and apparatus of Kondo. This modification would have been obvious to one of ordinary skill in the art because one of ordinary skill would have recognized that by embedding horizontal parities within the shortened row code words would have increased the error detection and correction capability.

As per claim 2, Kondo substantially teaches, in view of above rejections, (col. 1, lines 5-16 and elsewhere) Reed-Solomon coding. The Examiner would like to point out that Reed-Solomon coding is well-known in the art for deep-space communications which use Long Distance Codes, for example.

As per claim 3, Kondo substantially teaches, in view of above rejections, (abstract) a error correction coding method comprising segmenting continuous transmission data in units of predetermined lengths, which is analogous to reducing the length of each code word. Kondo then rearranges the data in parallel and performs error correction coding processing for each of horizontal line blocks, which is analogous to extending each row by encoding.

As per claim 4, Kondo substantially teaches, in view of above rejections, (col. 1) an error correction coding/decoding method and device and error correction decoding device using error correction using a block code. In this case, a punctured code is used at a coding rate higher than that of an original code, and high system compatibility is obtained. Although this is taught in the

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background section, it is well-known in the art to utilize puncturing codes, especially when performing rate matching which is necessary in LDC.

As per claims 5-6, Kondo substantially teaches, in view of above rejections, (Figure 2B) the horizontal line block error correction decoding circuit 121 and vertical line block error correction decoding circuit 122 of the error correction decoder 120 on the receiving side rearrange reception data in parallel in the horizontal direction, as on the transmitting side. Next, "0" is substituted into a variable  $i$  representing the error correction decoding processing execution count (step 211), and "1" is added to the variable  $i$  to perform decoding processing (step 212). More specifically, error correction of horizontal line blocks is performed sequentially from horizontal line 0 to horizontal line  $n/m-1$  (step 213), and error correction of vertical line blocks is performed sequentially from vertical line 0 to vertical line  $m-1$  (step 214). Steps 212 to 214 are repeated until the variable  $i$  reaches a predetermined processing count  $I$  (step 215).

As per claim 8, Kondo substantially teaches, in view of above rejections, (abstract) the error correction coding processing is performed for each of horizontal line blocks and vertical line blocks of the rearranged transmission data. The Examiner would like to point out that product codes are usually in matrix form, i.e. rows and columns.

As per claim 9, Kondo substantially teaches, in view of above rejections, (col. 1) the data transmission by a digital communication system or data storage by a digital storage device, error correction coding and decoding are performed to detect a data error from an error-correcting code (also called a redundant code) and correct the error to improve the reliability. As the error-correcting code, a multidimensional code such as a Hamming code, BCH (Bose-Chaudhuri-

Hocquenghem) code, or Reed-Solomon code is known. The multidimensional code is originally has a plurality of bits, and allows correct burst error correction or byte error correction.

As per claims 10-11 and 13, Kondo substantially teaches, in view of above rejections, (Figures 19A-B) a Reed-Solomon code enables error correction and loss correction by adding a check symbol to an information symbol. Error correction is processing of reconstructing a correct signal transmitted by the transmitting side when symbols having errors in a received signal are unknown. Loss correction is processing of reconstructing a correct signal transmitted by the transmitting side when symbols having errors in a received signal are known. As is generally known, with the error correction ability, when  $2N$  ( $N$ : arbitrary natural number) check symbols are present,  $N$  error symbols can be corrected. This error correction can be performed when error symbol position information (information representing a symbol having an error in a received signal) is not present. With the loss correction ability, when  $2N$  check symbols are present,  $2N$  lost symbols can be corrected. This correction can be performed when error symbol position information is present. The Examiner would like to point out that decoding is performed similar to that of encoding in a reverse manner.

As per claim 12, Kondo substantially teaches (abstract) an error correction coding method comprising segmenting continuous transmission data in units of predetermined lengths, rearranging the data in parallel, and performing error correction coding processing for each of horizontal line blocks and vertical line blocks of the rearranged transmission data. The Examiner would like to point out that segmenting data units into predetermined lengths is analogous to reducing the length of each row of the present application.

Kondo does not explicitly teach to embed horizontal parities within the shortened row code words as stated in the present application.

However, Kimura et al. (herein after referred to as single entity: Kimura) in an analogous art, substantially teaches (Figure 7) a digital signal is composed of a frame which consists of a predetermined number of blocks in the vertical direction, a block consisting of a predetermined number of bits in the horizontal direction and having a horizontal parity (error correcting code) for correcting error in the horizontal direction and a vertical parity for correcting errors in the vertical direction. The block also has a control bit for determining whether the error correction in the horizontal direction is to be carried out only once. A decoding identification detector (20) detects the content of the control bit, a controller (12) controls the re-writing of the digital signal into a frame buffer (13) after the error correction of the digital signal in the vertical direction by an error corrector (14). The controller (12) also controls the provision of the digital signal stored in the buffer (13) to the error corrector (14) according to the content of the control bit, determining whether the second error correction in the horizontal direction is to be carried out. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to embed horizontal parities within the shortened row code words within the method and apparatus of Kondo. This modification would have been obvious to one of ordinary skill in the art because one of ordinary skill would have recognized that by embedding horizontal parities within the shortened row code words would have increased the error detection and correction capability.

As per claims 14-16, Kondo substantially teaches, in view of above rejections, (col. 1) the data transmission by a digital communication system or data storage by a digital storage device,

error correction coding and decoding are performed to detect a data error from an error-correcting code (also called a redundant code) and correct the error to improve the reliability. As the error-correcting code, a multidimensional code such as a Hamming code, BCH (Bose-Chaudhuri-Hocquenghem) code, or Reed-Solomon code is known. The multidimensional code is originally has a plurality of bits, and allows correct burst error correction or byte error correction.


*Conclusion*

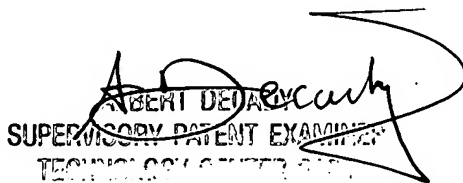
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Additional pertinent prior arts are included herein for Applicant's review.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mujtaba K. Chaudry whose telephone number is 571-272-3817. The examiner can normally be reached on Mon-Thur 9-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on 571-272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Mujtaba Chaudry  
Art Unit 2133  
January 5, 2006

  
ALBERT DECADY  
SUPERVISORY PATENT EXAMINER  
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